REMARKS

Request for Reconsideration

Applicant has carefully considered the matters raised by the Examiner in the Advisory Action but remains of the position that patentable subject matter is present. Applicant respectfully requests reconsideration of the Examiner's position based on the amendments to the claims and the following remarks.

Claim Amendments

Claims 1-20 have been canceled and Claims 21-40 have been presented for further examination. Claim 21 finds support in the Application at page 3, item 1., pages 8-9, bridging paragraph 19 and page 40, line 17.

Claims 22-40 essentially mirror old Claims 2-20 and support can be found in the Application in items 2.-20. as they appear on pages 3-9.

The Examiner will recognize that new Claim 21 contains a number of limitations of old Claim 1 as initially presented with the added limitations that the ink contains a polymer dispersant and that the ink is used for an ink

jet recording apparatus which has on-demand type ink jet nozzles that employ two or more separate droplets with a different volume.

The ink of the present Invention is required to have the shear rate dependency within the range as stated in Claim 21, namely, an absolute value of viscosity difference being not more than 5 mPa·s when measured at 25°C and a shear rate of 10 (1/s) and 1000 (1/s). By having such a small difference between the viscosity differences, the ink performs well in ink jet apparatus which have on-demand type ink jet nozzles employing two or more separate droplets each with a different volume. In order to provide a small, absolute value of viscosity difference, polymer dispersant is employed. Such fact is taught on page 40, lines 17-19.

The example in the Application specifically teaches that the diference in viscosity is critical to obtain the results of the present Invention. Specifically, the Examiner's attention is directed to Table 3 where the viscosity difference is greater than the recited limitation 5 mPa·s where it is shown that the ink ejection for an on-demand style ink jet recording apparatus is poor.

Prior Art

The Examiner had cited Yasuo, JP2002-188025; Maeda, Sanenobu, JP2003-212965; Laksin, US 6,232,361; and Takami, US 5,721,020.

It appears that the Examiner recognizes that none of these references teach the viscosity difference as recited in Claim 1. It also appears that the Examiner took the position that this viscosity limitation was inherent in the inks of these references.

Applicant submits that the Examiner's inherency position is unfounded for two reasons. First, the cited references do not teach or suggest the use of a polymer dispersant so as to lower the dependency on the ink viscosity during shear. As brought out in the Application and, specifically, at page 40, lines 17-19, the polymer dispersant is employed for this reason. Second, each of the references, except Yasuo, do not teach ink-jet recording. In other words, Laksin, Takami and Sanenobu are unrelated to ink-jet recording. Thus, there is no scientific reason to believe that these inks would be formulated so as to arrive at the specific absolute

viscosity difference as recited in Claim 21. It should be recognized that by having the low viscosity difference at the two different shear rates, the ink provides good performance in on-demand type ink jet nozzles that employ two or more separate droplets with different volumes.

Turning first to Laksin, it will be noted that Laksin in his examples teaches gravure printing, see Column 8, line 67; and square bar applicator, see Column 9, line 50 and Column 10, line 11. Clearly, these printing style types are unrelated to ink jet printing apparatus and are not concerned with droplets or the viscosity of droplets.

Additionally, with respect to Laksin, it will be noted that he teaches dispersants at Column 7, line 26, however, he is silent with respect to whether the dispersant is a polymer dispersant or some other type of dispersant.

Thus, it is submitted that Applicant's claims define over Laksin because Laksin does not teach a recording apparatus which have on-demand type ink jet nozzles that employ two or more separate droplets each with a different volume and because Laksin does not teach a polymer dispersant.

Turning to Takami, Takami teaches lubricating imparting agent (D), see Column 11, starting at line 17, however, it is not seen that Takami is teaching that these lubricating agents are employed so as to provide an absolute viscosity difference at two different shear rates that fall within the claimed Invention as recited in Claim 21.

Takami teaches a can coating composition, see Column 1, line 5. Can coating compositions are not used in ink jet recording apparatus and often are generally found to gum up nozzles in ink jet recording apparatus.

Thus, it is respectfully submitted that Takami does not teach nor suggest Claim 21 since Takami does not teach an ink which can be used in an on-demand type ink jet nozzles that employ two or more separate droplets with different volumes.

Turning to Sanenobu, Sanenobu teaches pigment agents, see Paragraph 27. It is not seen that these pigment agents are taught as being added to the ink in order to arrive at a small difference between the viscosity at two different shear rates.

Sanenobu teaches using a printing conveyor referred to as ECS-401GX. It refers to this type of printer as an eye graphic band conveying type. Respectfully, it is not seen that such printer is an on-demand type ink jet printer which ejects separate droplets having different volumes.

Turning now to Yasuo, Yasuo teaches different pigment agents starting on paragraph 48. However, it is not seen that Yasuo is teaching employing these pigment agents in order to arrive at a small difference in viscosity when measured at two different shear rates.

It is seen that Yasuo teaches an ink that can be used in an ink jet printer, however, it is still not seen that the ink used in an ink jet printer has its viscosity adjusted using a polymer dispersant so as to arrive at an ink which has a small difference between its viscosity when measured at two different shear rates.

Respectfully, Claim 21, as presented herein, and all of its dependent Claims, namely, Claims 22-40, define over each of the cited references since none of the references teach or suggest using a polymer dispersant to adjust the viscosity so as to obtain a small difference in viscosity when the viscosity of the ink is measured at two different shear rates. This is especially true since three of the references, namely, Laksin, Sanenobu and Tamaki do not teach an ink for use in an ink-jet recording apparatus.

Extension of Time

Applicant hereby requests a one-month extension of time within which to file their RCE and PTO 2038 is enclosed herewith which authorizes payment of the RCE Filing Fee and the one-month Extension of Time Fee. Should any further fees or extensions of time or fees be necessary in order to maintain this Application in pending condition, appropriate requests are hereby made and authorization is given to debit Account # 02-2275.

Conclusion

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance and such action is respectfully requested.

Respectfully submitted,

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